Claims

[c1] 1.A liquid crystal display device, comprising:
a liquid crystal cell forming an image display area;
a driver for applying a voltage to said liquid crystal cell; and
an overdrive controller for controlling said driver to apply an overdrive voltage exceeding a targeted pixel value to said liquid crystal cell, wherein said overdrive controller controls such that the driver outputs the voltage which is accelerated or decelerated to make up effective brightness of each sub-pixel which forms a single full-pixel.

[c2] 2.The liquid crystal display device according to claim 1, wherein said overdrive controller selects the overdrive voltage for the sub-pixel exhibiting the slowest transition of brightness and selects the voltage to be accelerated or decelerated for the other sub-pixels in order to coordinate with the sub-pixel exhibiting the slowest transition.

[c3] 3.The liquid crystal display device according to claim 2, wherein said overdrive controller stores predicted capacitance for each of the sub-pixels and calculates the voltage to be accelerated or decelerated in order to coordinate with each other based on the predicted capacitance.

[c4] 4.The liquid crystal display device according to claim 1, wherein said overdrive controller stores predicted capacitance for each of the sub-pixels and calculates the overdrive voltage based on the predicted capacitance.

[c5] 5.A liquid crystal display device, comprising:
a liquid crystal cell for displaying an image when a voltage is applied to each pixel in a TFT structure;
a driver for applying a voltage to each of the pixels of said liquid crystal cell; and
a controller for controlling the driver to apply a voltage to said liquid crystal cell, the voltage exceeding what is to be applied when displaying targeted brightness on the liquid crystal cell, wherein said controller comprises:
transition state comprehending unit for comprehending for each of the sub-pixels a transition state between present starting brightness of said liquid

crystal cell predicted in advance and targeted brightness at one refresh cycle later which is to be displayed hereupon; and
voltage calculating unit for calculating a voltage to be applied to each of said sub-pixels based on the transition state comprehended.

[c6] 6.The liquid crystal display device according to claim 5, wherein said controller further comprises:
capacitance predicting unit for predicting a capacitance value of a pixel that will be reached after the refresh cycle when applying said voltage calculated by said voltage calculating unit to the pixel with the present capacitance value; and
a storage device for storing said capacitance value predicted by said capacitance predicting unit.

[c7] 7.The liquid crystal display device according to claim 6, wherein said present starting brightness used by said transition state comprehending unit is said capacitance value stored in said storage device.

[c8] 8.A liquid crystal display drive circuit, comprising:
transition state comprehending means for comprehending a transition state from present brightness to targeted brightness for each sub-pixel;
select means for selecting the sub-pixel exhibiting the slowest transition and the other sub-pixels from the comprehended transition states; and
acceleration/deceleration voltage calculating means for calculating a voltage to accelerate or to decelerate a transition of brightness for said other sub-pixels in order to coordinate with each other.

[c9] 9.The liquid crystal display drive circuit according to claim 8, further comprising acceleration voltage calculating means for calculating a voltage to accelerate a transition of brightness for said sub-pixel exhibiting the slowest transition.

[c10]

10.A liquid crystal display drive circuit, comprising:
a capacitance predicting unit for predicting a capacitance value that each pixel will reach at one refresh cycle later when applying a predetermined voltage for targeted brightness;
a storage device for storing the predicted capacitance value;

a transition state comprehending unit for comprehending a transition state of brightness based on the targeted brightness of each sub-pixel at one refresh cycle later and the capacitance value stored in said storage device; and
a voltage calculating unit for calculating a voltage to be applied to each sub-pixel based on the transition state of brightness comprehended.

[c11] 11.The liquid crystal display drive circuit according to claim 10, wherein said voltage calculating unit calculates the voltage which is accelerated or decelerated to coordinate the effective brightness of each sub-pixel.

[c12] 12.A method for driving a liquid crystal display, wherein an input pixel value is overdriven to output a modified pixel value, the method comprising the steps of:
predicting a capacitance value that each pixel will reach at one refresh cycle later when applying a predetermined voltage for the input pixel value;
storing the predicted capacitance value;
comprehending a transition state of brightness for each of sub-pixels constituting each pixel based on an input pixel value at one refresh cycle later and said stored capacitance value; and
calculating a voltage for a predetermined sub-pixel to be underdriven depending on the transition state of brightness comprehended.

[c13] 13.The method according to claim 12, further comprising the steps of:
selecting the sub-pixel exhibiting the slowest transition of brightness from the transition states comprehended; and
calculating a voltage for the selected sub-pixel to be overdriven.

[c14] 14.A method for driving a liquid crystal display, comprising the steps of:
comprehending effective brightness of each of R(red), G(green) and B(blue) sub-pixels in a transitional frame based on targeted brightness of each of the sub-pixels;
coordinating effective brightness of each of said sub-pixels with each other based on the effective brightness comprehended in the transitional frame until the targeted brightness is reached; and
controlling a transitional color to be a mixed color lying on a linear interpolation

curve between a previous and subsequent colors of a boundary.

[c15] 15.The method according to claim 14, further comprising the steps of:
selecting the sub-pixel exhibiting the slowest transition of brightness based on the transition states of the effective brightness comprehended; and
calculating a voltage for the other sub-pixels other than the selected one to be underdriven such that the effective brightness for the other sub-pixels lies on a linear interpolation curve of brightness between a previous and subsequent colors of a boundary.

[c16] 16.A program for directing a computer to drive a liquid crystal display device, the program comprising the functions of:
predicting a capacitance value that each pixel will reach at one refresh cycle later when applying a predetermined voltage to said liquid crystal display device based on a pixel value to be displayed;
storing the predicted capacitance value in a buffer of said computer;
comprehending a transition state of brightness for each of sub-pixels constituting each pixel based on an input pixel value at one refresh cycle later and said stored capacitance value; and
calculating a voltage for a predetermined sub-pixel to be underdriven depending on the transition state of brightness comprehended.

[c17] 17.A program for directing a computer to drive a liquid crystal display device, the program comprising the functions of:
comprehending effective brightness of each of R(red), G(green) and B(blue) sub-pixels in a transitional frame based on targeted brightness of each of the sub-pixels;
coordinating effective brightness for each of said sub-pixels with each other based on said effective brightness comprehended in the transitional frame until said targeted brightness; and
controlling a transitional color to be a mixed color lying on a linear interpolation curve between a previous and subsequent colors of a boundary.